

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on February 14, 2003. Claims 1, 2, 8, 9, 12, 17 are amended. Claims 1-83 remain pending in this application. Claims 23-83 have been previously withdrawn from consideration.

Double Patenting Rejection

Claims 1-22 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of copending U.S. Application No. 10/081,818 and over claims 1-23 of copending U.S. Application No. 09/943,134. Applicant notes the provisional rejection. The '818 and the '134 applications are currently pending. Applicant will appropriately address this issue when the claims are otherwise deemed to be allowable.

Rejections of the Claims

The following rejections were made:

Claim 1 was rejected under 35 USC § 102(b) as being anticipated by Faraone (U.S. Patent No. 4,757,360);

Claim 9 was rejected under 35 USC § 103(a) as being unpatentable over Faraone (U.S. Patent No. 4,757,360);

Claims 1 was rejected under 35 USC § 102(e) as being anticipated by and claim 9 under 35 USC § 103(a) as being unpatentable over Uchida (U.S. Patent No. 6,229,175);

Claims 1-6, 10-11, and 13-17 were rejected under 35 USC § 102(b) as being anticipated by or, in the alternative, under 35 USC § 103(a) as being obvious over Lee et al. (U.S. Patent No. 5,923,056);

Claims 1-22 were rejected under 35 USC § 102(e) as being anticipated by or, in the alternative, under 35 USC § 103(a) as being obvious over Nguyen et al. (U.S. Patent Application No. 2002/0137250); and

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Claims 1-23 were rejected under 35 USC § 102(e) as being anticipated by or, in the alternative under USC § 103(a) as being unpatentable over Lee et al. (U.S. Patent Application No. 2002/0106536).

With respect to amended claim 1, Applicant is unable find, among other things, in the cited portions of the above-identified references an asymmetrical low tunnel barrier intergate insulator selected to provide a desired first barrier height with respect to the floating gate and a desired second barrier height with respect to the control gate where the first barrier height is different than the second barrier height to promote easier erase operations and longer retention, as recited in the claim. The amendment to claim 1 is supported at least at page 41, lines 23-25 and Figures 7A and 7B of the present application. Applicant respectfully asserts that the recited intergate insulator is neither shown by any of the above-identified references, nor suggested by any individual or combination of the above-identified references. Claims 2-8 depend on and further clarify the claimed subject matter recited in amended claim 1. Thus, claims 2-8 are believed to be patentable at least for the reasons provided with respect to amended claim 1.

With respect to amended claim 9, Applicant is unable find, among other things, in the cited portions of these references an asymmetrical low tunnel barrier intergate insulator having a number of small compositional ranges such that compositional gradients can be formed which produce a first barrier height with the floating gate and a different second barrier height with the control gate to promote easier erase operations and longer retention, as recited in the claim. Claims 10-16 depend on and further clarify the claimed subject matter recited in amended claim 9. Thus, claims 10-16 are believed to be patentable at least for the reasons provided with respect to amended claim 9. The amendment to claim 9 is supported at least at page 41, lines 23-25, page 22 - 28, and Figures 7A and 7B of the present application. Applicant respectfully asserts that the recited intergate insulator is neither shown by any of the above-identified references, nor suggested by any individual or combination of the above-identified references.

With respect to amended claim 17, Applicant is unable find, among other things, in the cited portions of these references a polysilicon floating gate, a first metal layer formed on the polysilicon floating gate, a metal oxide intergate insulator formed on the metal layer, a second metal layer formed on the metal oxide intergate insulator, and a polysilicon control gate formed

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on the second metal layer, as recited in the claim. The metal oxide intergate insulator includes an asymmetrical metal oxide having a number of small compositional ranges such that gradients can be formed in an applied electric field which produce a first barrier height with respect to the floating gate and a different second barrier height with the control gate to promote easier erase operations and longer retention, and the second metal layer has a different work function from the first metal layer to further promote easier erase operations and longer retention. Claims 18-22 depend on and further clarify the claimed subject matter recited in amended claim 17. Thus, claims 18-22 are believed to be patentable at least for the reasons provided with respect to amended claim 17.

Applicant notes that Uchida (U.S. Patent No. 6,229,175), Nguyen et al. (U.S. Patent Application No. 2002/0137250), and Lee et al. (U.S. Patent Application No. 2002/0106536) are indicated to be 102(e) references. Applicant does not admit that these references are prior art, and reserves the right to swear behind them at a later date. Even so, Applicant believes that the claimed subject matter is distinguishable over these reference at least for the reasons provided above.

Applicant respectfully requests withdrawal of the claim rejections, and reconsideration and allowance of the claims.

Claim Objections

Claims 2 and 9 were objected to because of informalities/typographical errors. Applicant has amended claims 2 and 9 to clarify that the gradients are compositional gradients that can be formed to produce different barrier heights. Support for the amendment is found at least at page 22 line 15 through page 28 line 27. Applicant respectfully requests withdrawal of the objection.

Claims 8 and 12 were objected to under 37 CFR 1.75(c). Applicant has amended claims 8 and 12 to include the term asymmetrical. Applicant respectfully requests withdrawal of the objection.

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CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney ((612) 373-6960) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743

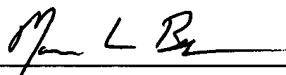
Respectfully submitted,

LEONARD FORBES ET AL.

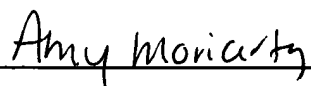
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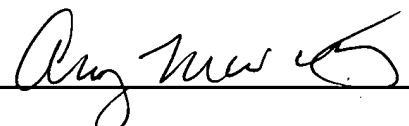
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Date 5-14-03

By 
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O.Box 1450, Alexandria, VA 22313-1450, on this 14th day of May, 2003.


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